



North Carolina Turnpike Authority

*Board of Directors  
Finance Committee Meeting*

December 1, 2016



## *Today's Agenda*

- Proposed 2017 Meeting Dates
- Monroe Expressway Update
- Managed Lanes Overview



# *Proposed 2017 Meeting Dates*

David Roy

NCTA Director of Finance



# *Proposed 2017 Meeting Dates*

## NCDOT Board Dates

- January 4-5
- February 1-2
- March 1-2
- April 5-6
- May 3-4
- May 31-June 1
- June 28-29
- August 2-3
- September 6-7
- October 4-5
- November 1-2
- December 6-7

## NCTA Board Dates

- February 2
- May 4
- August 3
- November 2



# *Monroe Expressway Update*

David Roy

NCTA Director of Finance



## *Project Status Update*

ITEM	Current Budget	Exp. Thru 9/30/16	% Complete
DESIGN-BUILD CONTRACT	\$ 453,500,644	\$ 279,375,854	62%
LANDSCAPING	\$ 5,909,217	\$ 18,960	0.3%
CEI BY SUMMIT	\$ 18,183,632	\$ 4,777,964	26%
UTILITIES	\$ 4,759,188	\$ 710,221	15%
DIESEL FUEL AND AC RESERVES	\$ 13,884,390	\$ (796,249)	-6%
RIGHT OF WAY	\$ 147,268,824	\$ 103,419,642	70%
TOLL INTEGRATION	\$ 23,950,050	\$ 893,947	3.7%
ADMINISTRATION & RESERVES	\$ 63,414,554	\$ 5,399,443	9%
TOTALS	\$ 730,870,501	\$ 393,799,783	54%

## *Design-Build Construction Status (as of September 30, 2016)*

### > 75% complete

Mobilization  
Engineering / Design  
Clearing and Grubbing  
Earthwork  
Drainage  
Water and Sewer  
Culverts

### > 50% complete

Project Management  
Erosion Control  
Bridges  
Abutment Walls / Noise  
Walls  
Guardrail / Fencing

### < 50% complete

Paving  
Concrete Barrier  
Pavement Marking  
Seeding  
ITS / Toll Infrastructure  
Signing

## *Right of Way Budget Update (as of November 18, 2016)*

Project Element	Est. Cost (\$M)
Settlements to Date	\$ 46.74
Condemnation Deposits	\$ 39.75
Condemnation Risk (1x deposit)	\$ 39.75
Agency Costs to Date	\$ 17.06
Additional Agency Costs (est.)	\$ 0.55
<b>Total ROW Cost Estimate</b>	<b>\$ 143.84</b>

- All parcels have right-of-entry
- 362 parcels settled
- 109 parcels in condemnation proceedings
  - Built-in contingency of 100% above appraised value
- \$147.3M budget (\$3.46M underrun currently projected)



## *Contingency and Reserve Funds (as of September 30, 2016)*

ITEM	Current Budget	Exp. Thru 9/30/16	Remaining
INCENTIVES	\$ 3,000,000	\$ -	\$ 3,000,000
CHANGE ORDER CONTINGENCY	\$ 26,565,727	\$ 4,375,751	\$ 22,189,976
MISCELLANEOUS RESERVE FUNDS	\$ 15,340,645	\$ 109,013	\$ 15,231,632
TOTALS	\$ 44,906,372	\$ 4,484,764	\$ 40,421,608

# Marketing Considerations

## Proposed Transaction Schedule\*

November 2016							December 2016						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
		1	2	3	4	5					1	2	3
6	7	8	9	10	11	12	4	5	6	7	8	9	10
13	14	15	16	17	18	19	11	12	13	14	15	16	17
20	21	22	23	24	25	26	18	19	20	21	22	23	24
27	28	29	30				25	26	27	28	29	30	31

Week of	Date	Event
November 14 <sup>th</sup>	<b>11/16</b>	TIFIA Credit Council Approval
November 21 <sup>st</sup>	<b>11/21</b>	NCTA Offsite Meeting in Charlotte
		Market Update
November 28 <sup>th</sup>	<b>11/29</b>	Record Online Investor Presentation
		Finalize Preliminary Official Statement
	<b>11/30</b>	LGC Approval
		Post / Release POS and Online Investor Presentation
	<b>12/1-2</b>	Hold for One-on-one Investor Calls
December 5 <sup>th</sup>	<b>12/5</b>	Hold for One-on-Ones
	<b>12/6</b>	Pre-Pricing Activities
		Syndicate Price Views Due
		Pre-Pricing Discussion
	<b>12/7-8</b>	Institutional Order Period
		Final Pricing Discussion
		Verbal Award
		Execute BPA
December 12 <sup>th</sup>	<b>12/13</b>	Bond & TIFIA Pre-Closing
	<b>12/14</b>	Bond & TIFIA Closing

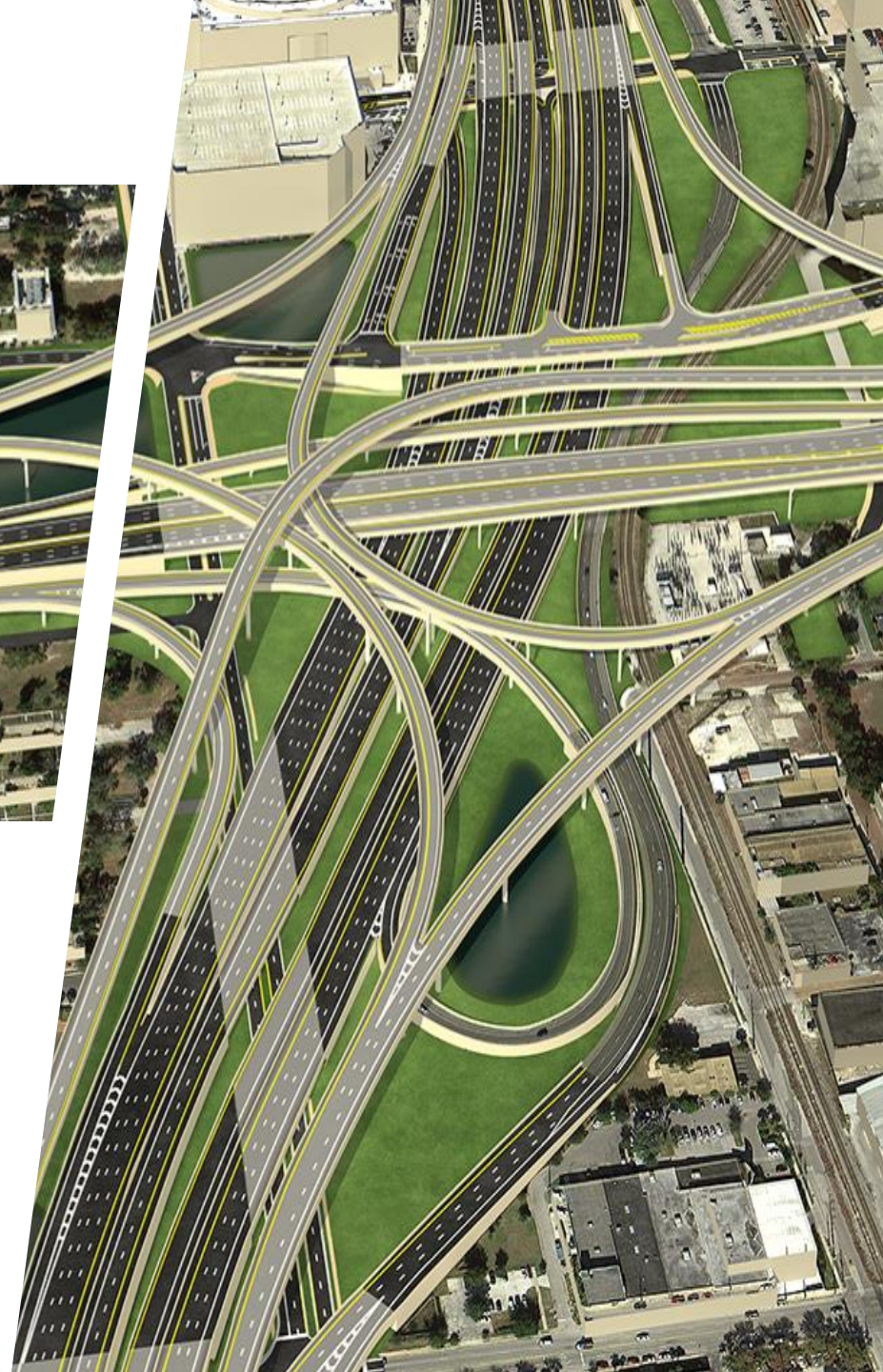
\* Preliminary, subject to change.

# *Managed Lanes Overview*

Michael Davis

RS&H





# MANAGED LANES OVERVIEW

MICHAEL DAVIS, PE, DBIA  
RS&H TOLLS SERVICE GROUP LEADER





# Agenda

- » State of the Interstate Highway System
- » Next Steps
- » Managed Lanes
  - What are they?
  - Policy
  - Finance
  - Design
  - Operations
  - Enforcement

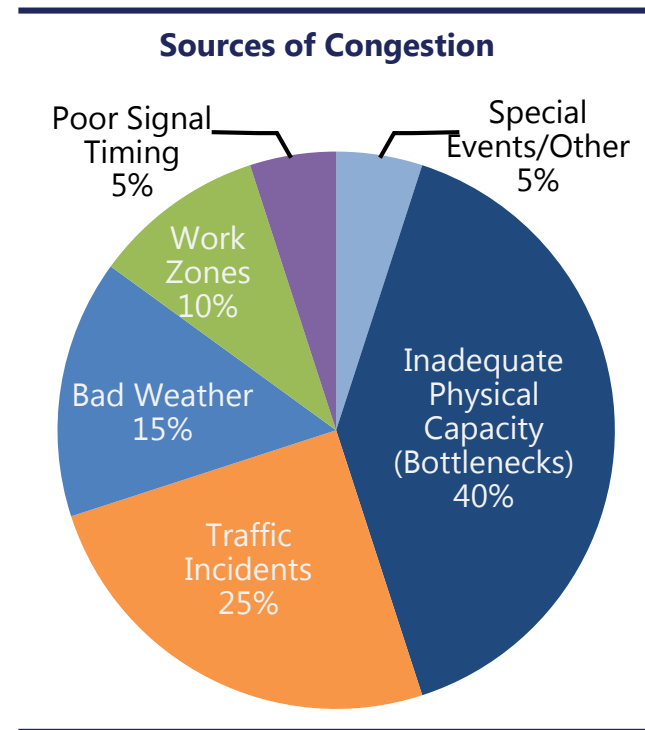


# *STATE OF THE INTERSTATE HIGHWAY SYSTEM*



# Interstate Highway System

- » In 1960, 7.19 trillion highway miles
- » In 2014, 30.25 trillion highway miles
- » Real highway spending has fallen 50% since the 50's
- » Results:
  - Failing infrastructure – ASCE graded major roads a “D”
  - Overly **congested** – 1.9B gallons of gasoline wasted annually
  - \$100B needed to maintain, \$170B needed for improvements
  - Current **spending** levels are \$91B





# *NEXT STEPS*





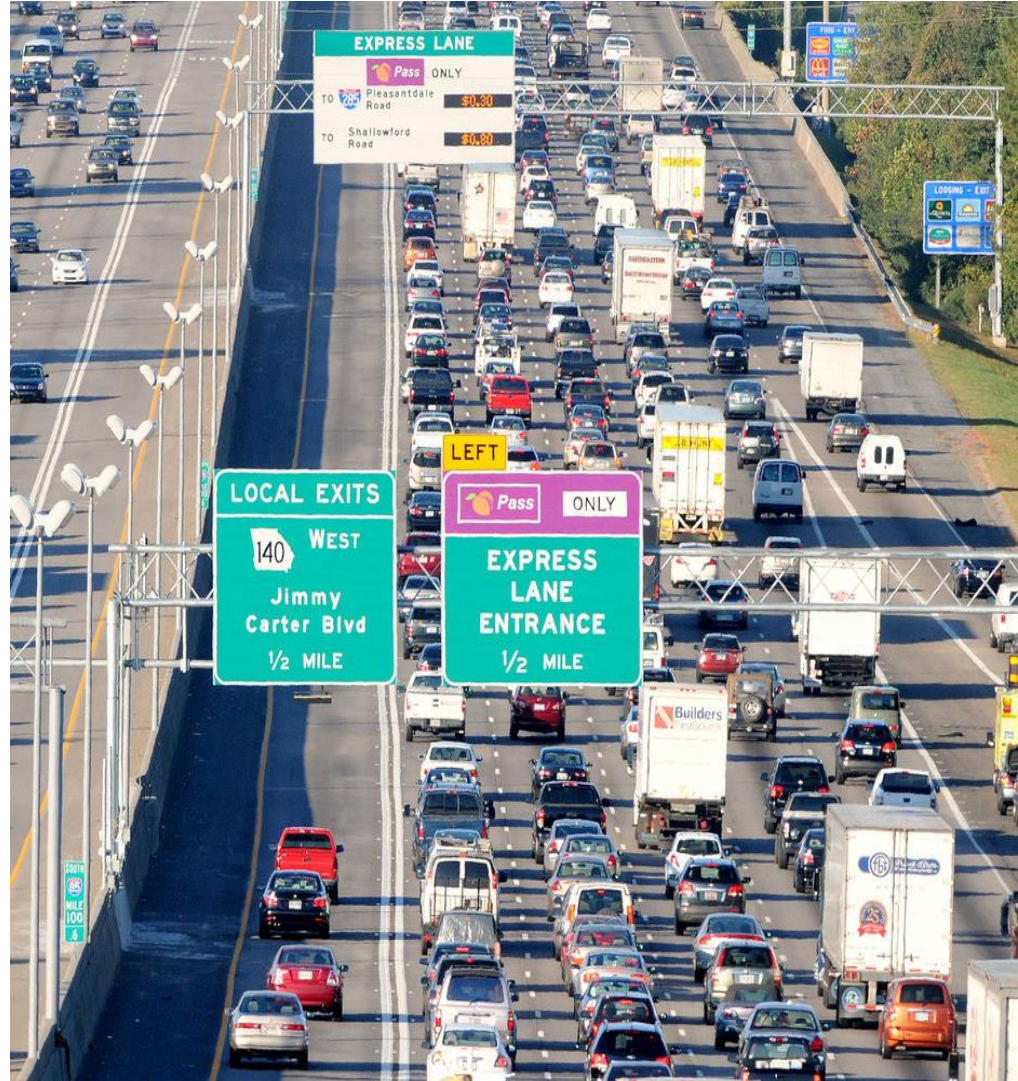
# Tolls

- » Funding mechanism to maintain an existing facility
- » Way to manage congestion
- » Innovative yet practical means to build better roads



# Toll Industry Trends

- » All Electronic Tolling (AET)
- » **Managed lanes projects and networks**
- » Transit and fare pay strategies
- » Interoperability
- » Interstate tolling
- » VMT and Mileage Based User Fees (MBUF)
- » Connected and autonomous vehicles





# *MANAGED LANES*

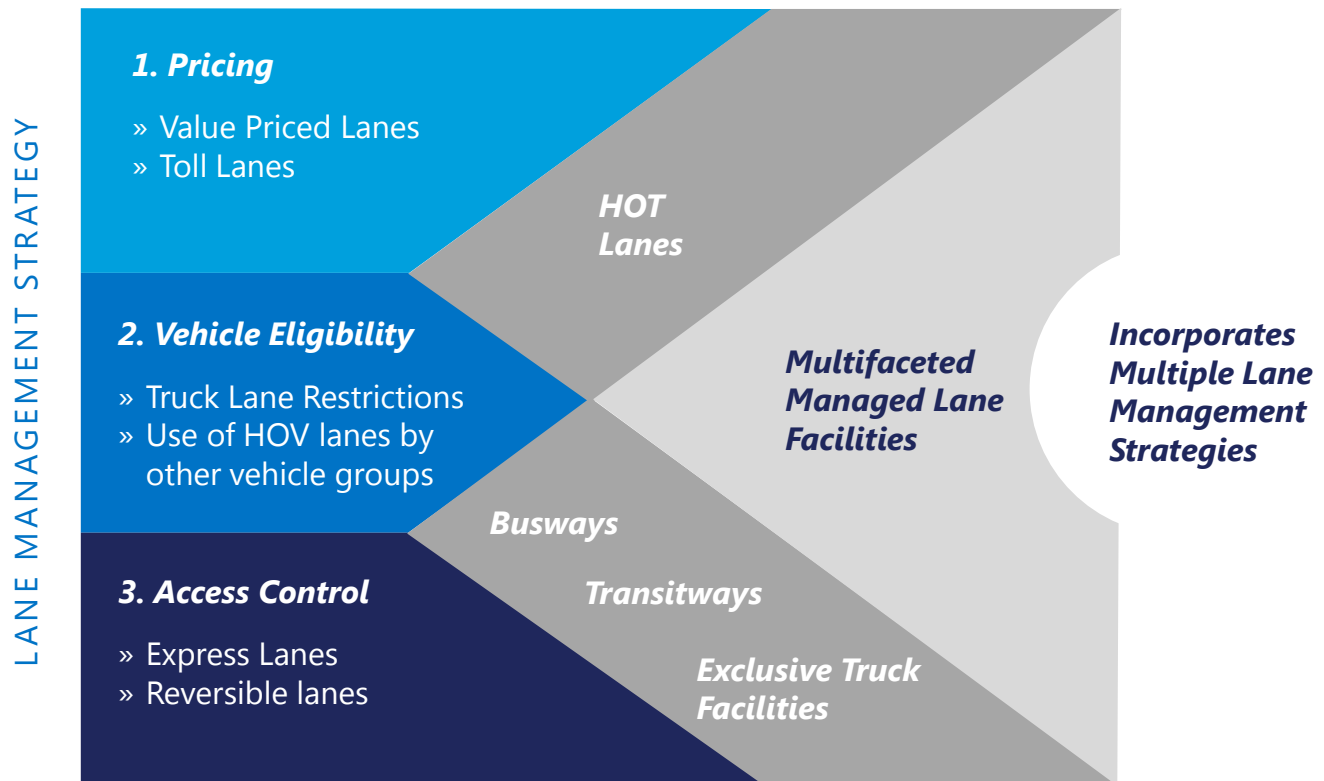


# What are Managed Lanes ?

- » “Freeway-within-a-freeway”
- » Enhanced Operational Flexibility – “not the norm”
- » Examples
  - High Occupancy Vehicle (HOV) lanes
  - High Occupancy Toll (HOT) lanes
  - Express lanes
  - Dedicated busways
- » Principal management strategies

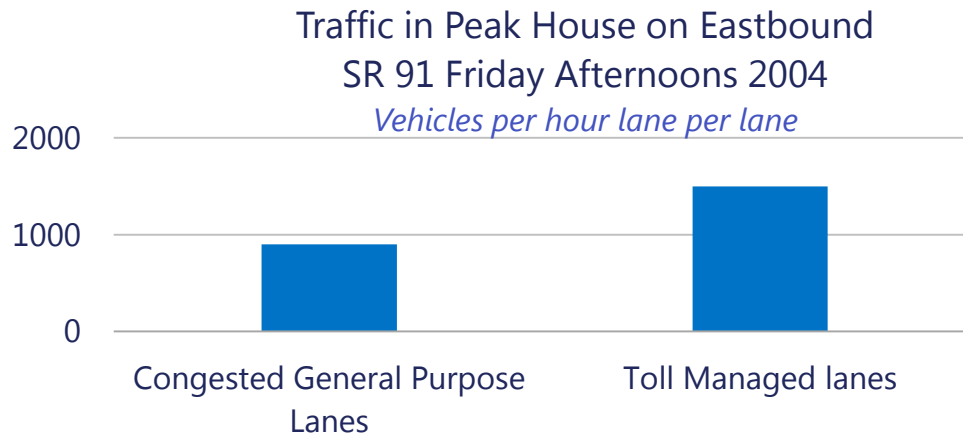


# Three Principal Components



# Added Capacity?

- » “Build it and They Will Come”
- » Congestion management
- » RICE experiment
  - More vehicles through a corridor during heavy congestion



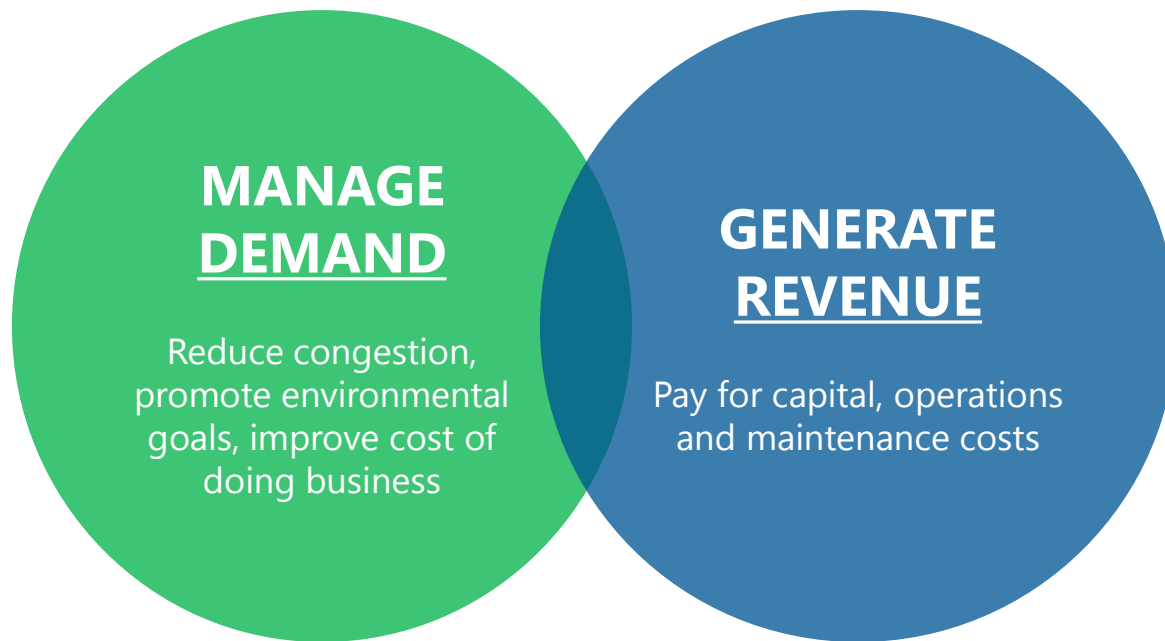


# Things to Consider

- » **Policy**
- » **Finance**
- » **Design**
- » Technology
- » **Operations**
- » **Enforcement**
- » Public Acceptance

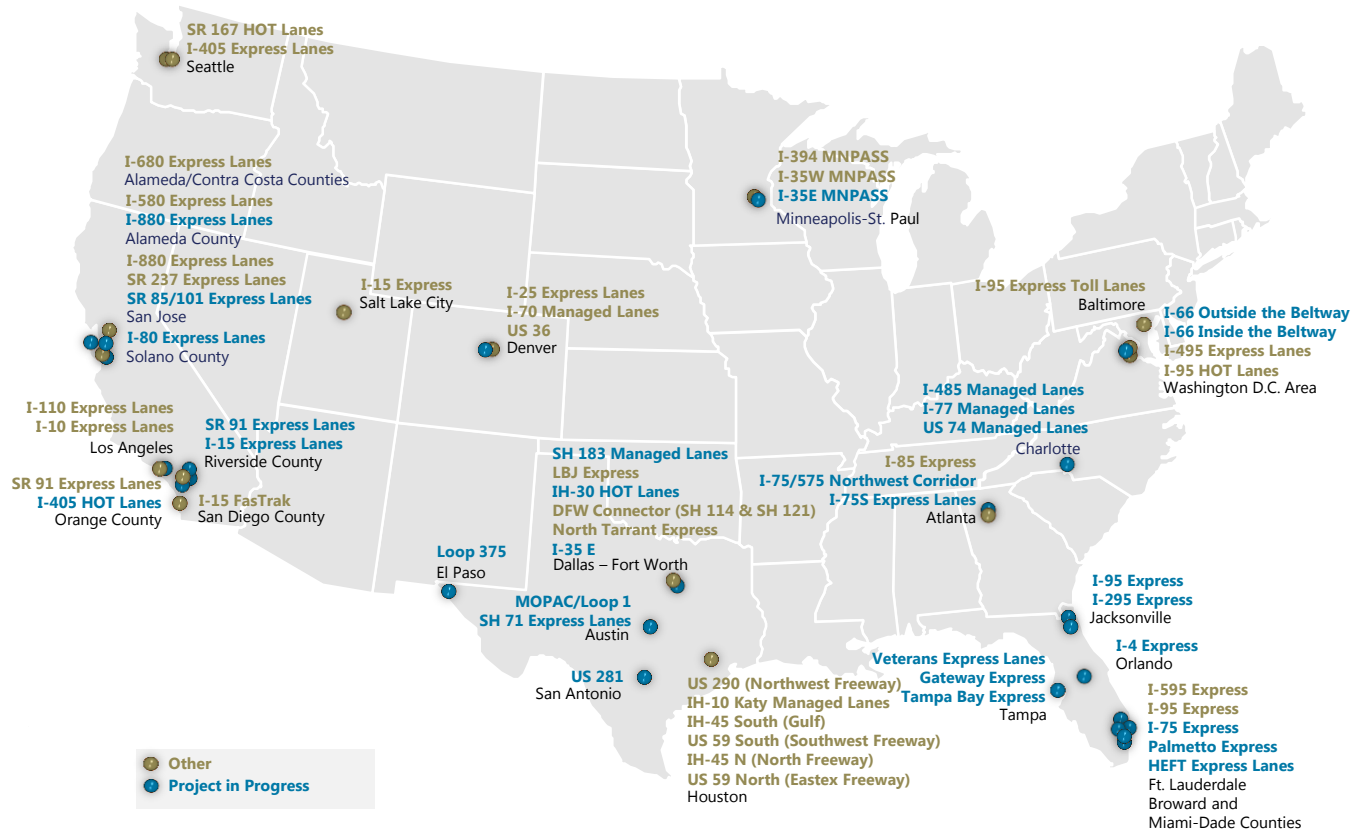


# Policy Objectives



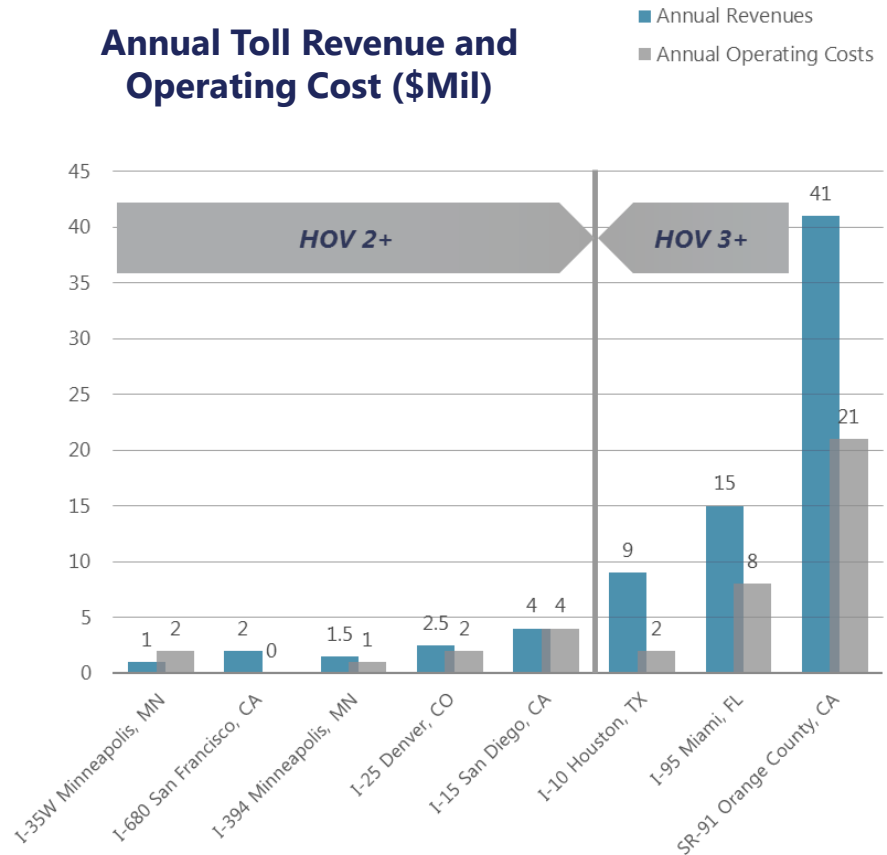


# Priced Managed Lanes Projects in the U.S.



# Priced Managed Lanes: Finances

- » Regional aspect vs. stand-alone project/corridor
- » Revenue scenarios (manage demand, generate revenue)
- » Construction cost and project delivery models
- » Operations and maintenance costs
- » Economy and market conditions



# Range of Facility Designs for Access



**Continuous Access** HOT Lane on I-35W  
*Minneapolis, MN*



**Weave Lane Access** to the SR 167 HOT Lane  
*Seattle, WA*



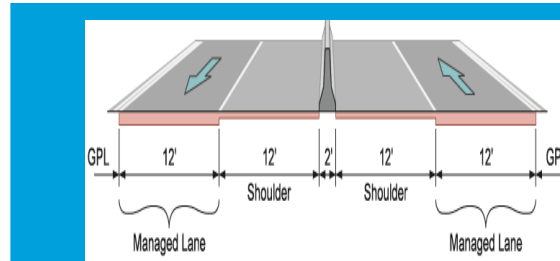
**Slip Ramp Access** to the I-680 HOT Lane  
*Alameda County, CA*



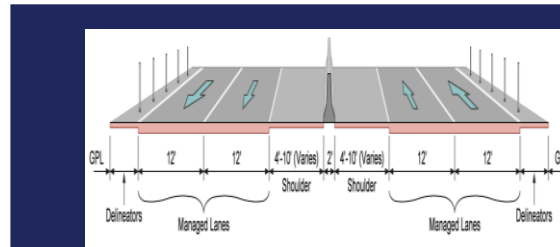
**Dedicated Access Ramps** to I-15 Express Lanes  
*San Diego, CA*

# Access Control - Separating Managed Lanes

## Types



**Striping only**



**Buffer (2'-4')**

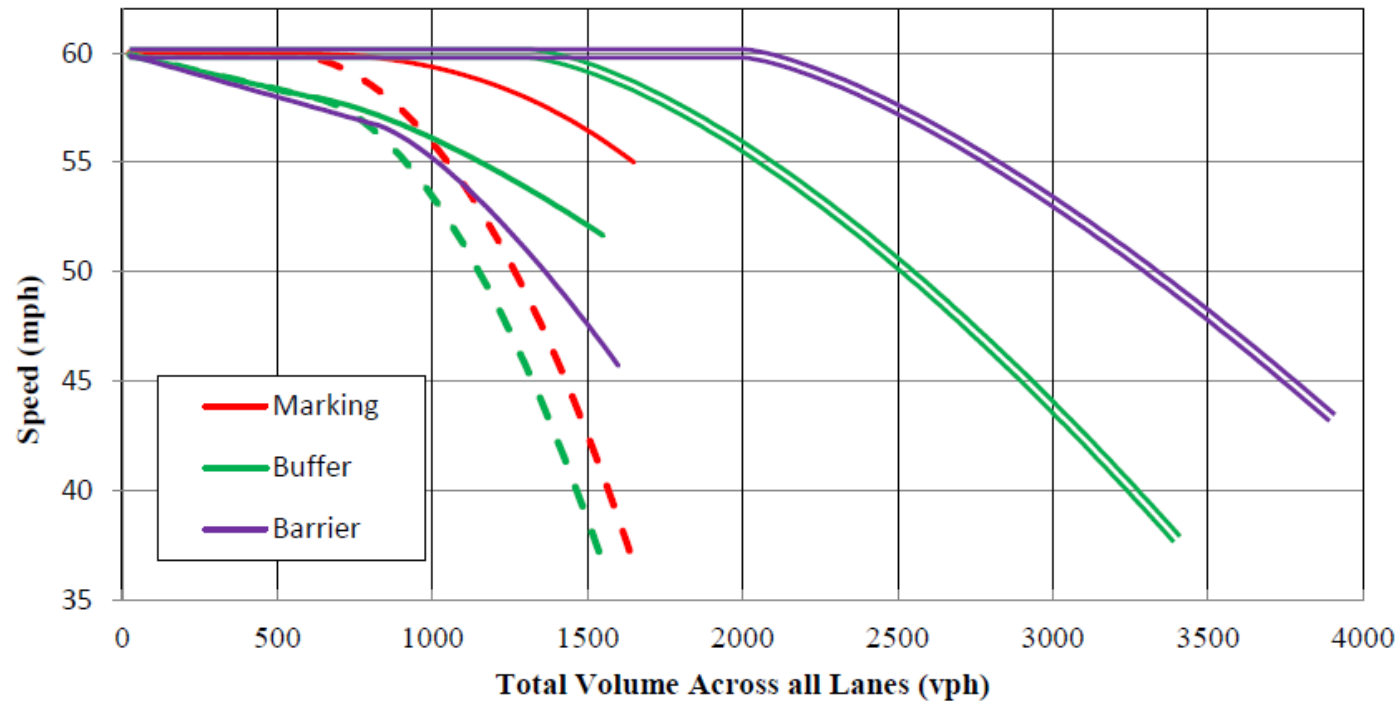
- » Striping
- » Delineators



**Barrier**

# Impacts of Speed

**ML Sample Speed-Flow Relationships for Different Separation Types (FFS = 60 mph)\***



\* Single lines refer to one-lane ML facilities, double lines to two-lane ML facilities; dashed lines correspond to the speed-flow relationship under friction effect conditions

# Design Considerations

- » Lane/shoulder/buffer in constrained urban areas
- » Enforcement areas
- » Statewide vs. regional approaches
- » Access and ingress/egress schemes
- » Signing and striping



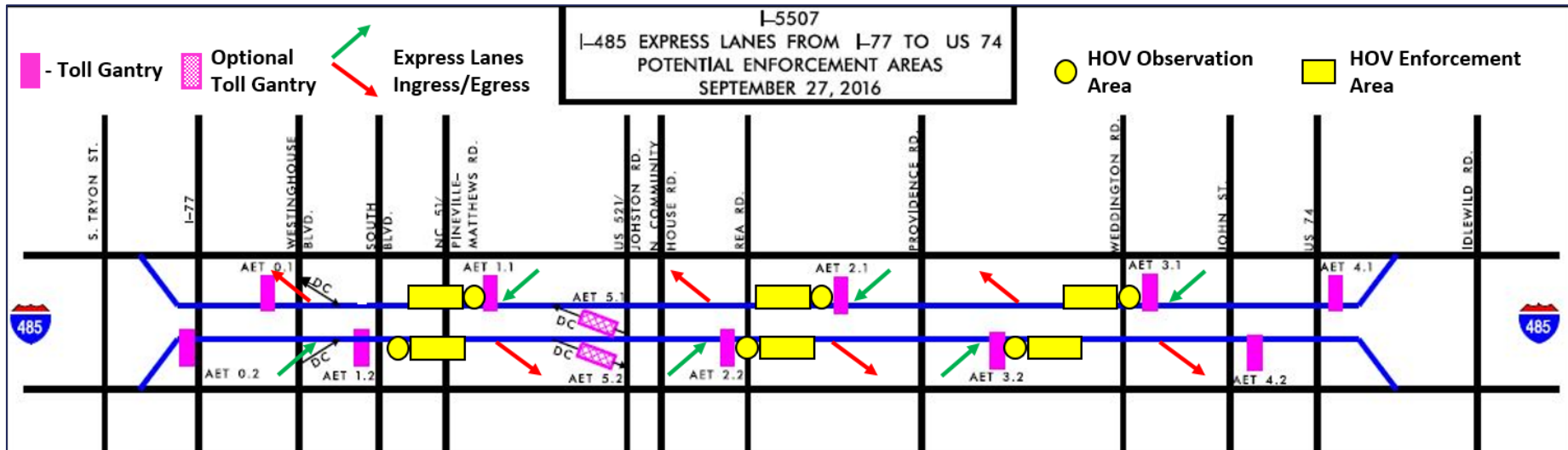
I-10 Katy Freeway Express Lanes, Houston, TX



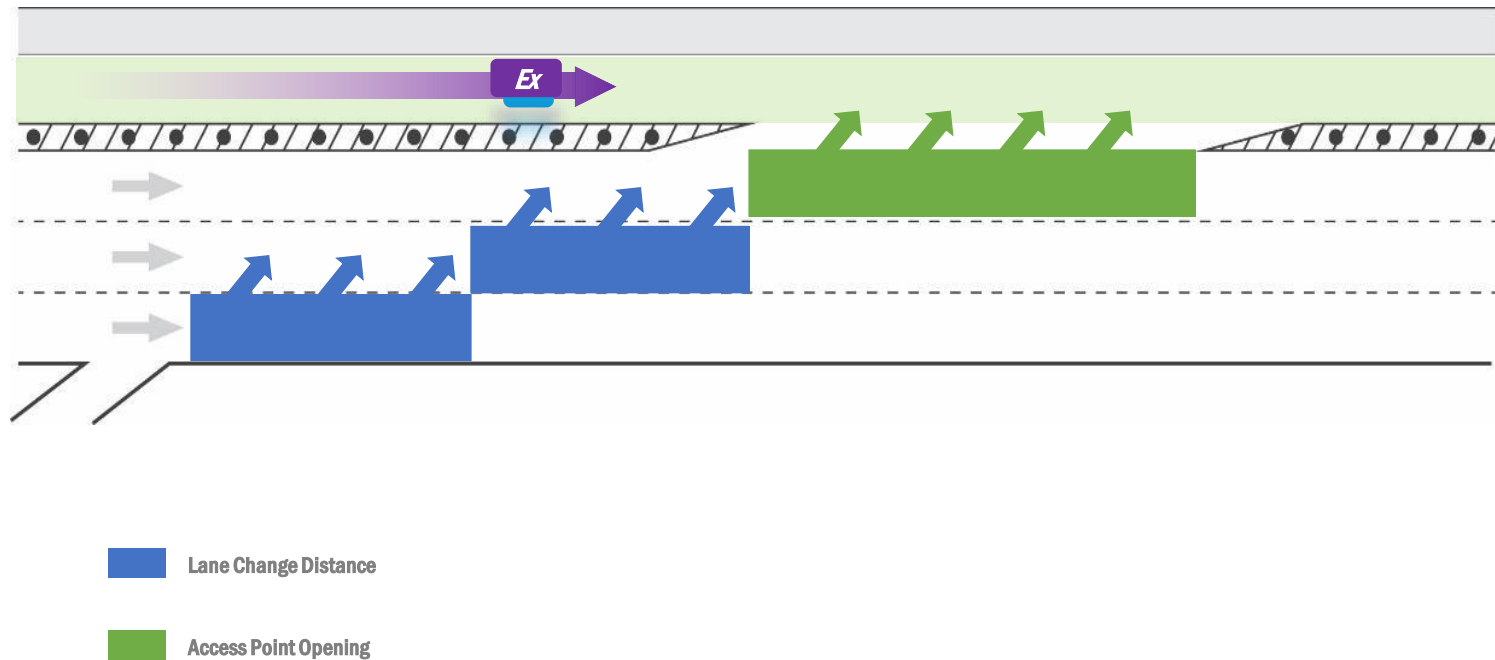
I-495 Express Lanes, Virginia/D.C. Area



# HOV Enforcement



# Access Points Guidelines



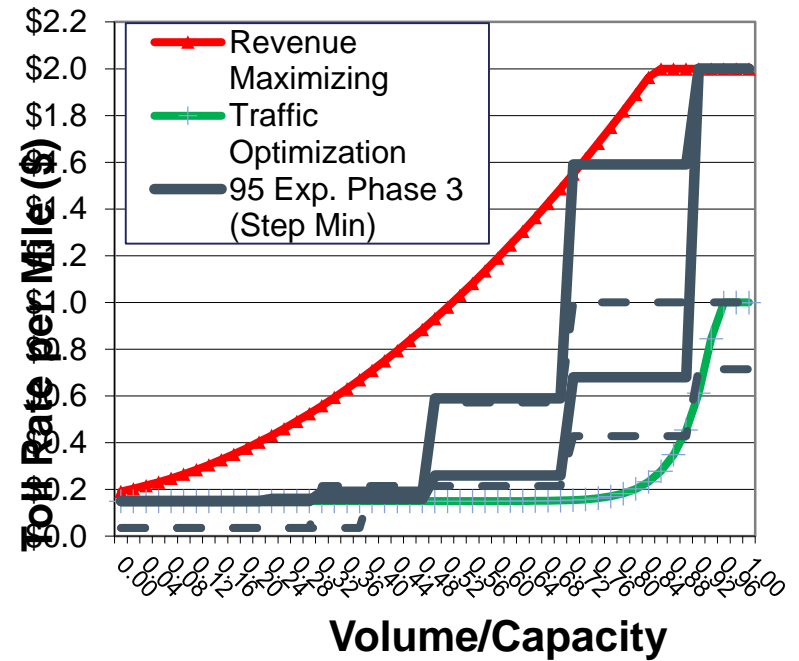
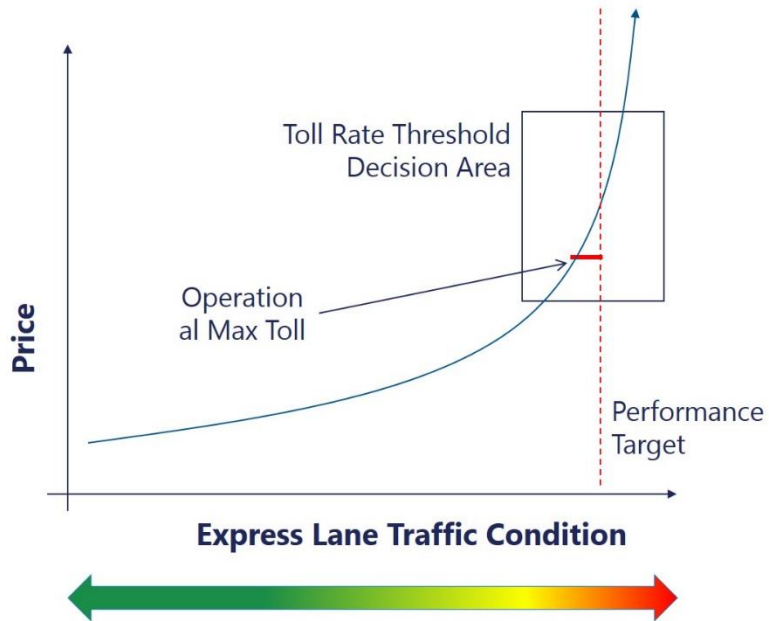


# Operational Impacts

- » Congestion Pricing
  - Selling Extra Capacity to Allow for Maximum Throughput
- » HOV Enforcement
  - Helps to Ensure Effective Congestion Management
- » Incident Response
- » Operations & Maintenance Costs
  - Long Term Needs



# Toll Pricing Approach



## Heat Maps



# HOV Enforcement

- » Impacts to Congestion Management
- » Highway Patrol Staging



*THANK YOU!*

